	Application No.	Applicant(s)	
Nation of Allerta Liller	10/666,231	HAY ET AL.	
Notice of Allowability	Examiner	Art Unit	ر ا
	Hoang V Nguyen	2821	m
The MAILING DATE of this communication application application application and the communication application and the communication application and the communication application applic	S (OR REMAINS) CLOSED in t 5) or other appropriate commun RIGHTS. This application is su	his application. If not includication will be mailed in due	ded e course. <b>THIS</b>
1. $\boxtimes$ This communication is responsive to <u>application filed on</u>	18 September 2003.		
2. The allowed claim(s) is/are 1-46.			
3. $\boxtimes$ The drawings filed on <u>18 September 2003</u> are accepted	by the Examiner.		
<ul> <li>4.  Acknowledgment is made of a claim for foreign priority</li> <li>a)  All b)  Some* c)  None of the:</li> <li>1.  Certified copies of the priority documents ha</li> <li>2.  Certified copies of the priority documents ha</li> <li>3.  Copies of the certified copies of the priority of International Bureau (PCT Rule 17.2(a)).</li> <li>* Certified copies not received:</li> </ul>	ve been received. ve been received in Application	No	ation from the
Applicant has THREE MONTHS FROM THE "MAILING DATE noted below. Failure to timely comply will result in ABANDON THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.		reply complying with the re	equirements
5. A SUBSTITUTE OATH OR DECLARATION must be sub INFORMAL PATENT APPLICATION (PTO-152) which gi			NOTICE OF
6. CORRECTED DRAWINGS (as "replacement sheets") m  (a) including changes required by the Notice of Draftsperior (b) hereto or 2) to Paper No./Mail Date  (b) including changes required by the attached Examined Paper No./Mail Date  Paper No./Mail Date  Identifying indicia such as the application number (see 37 CFR each sheet. Replacement sheet(s) should be labeled as such in	erson's Patent Drawing Review (	n the Office action of drawings in the front (not the 1.121(d).	
7. DEPOSIT OF and/or INFORMATION about the department attached Examiner's comment regarding REQUIREMEN	T FOR THE DEPOSIT OF BIOL	OGICAL MATERIAL.	Note the
Attachment(s)  1. ☑ Notice of References Cited (PTO-892)  2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SE Paper No./Mail Date  4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	6) 6. Interview Sur Paper No./M 8/08), 7. Examiner's A	rmal Patent Application (P <sup>-</sup> nmary (PTO-413), lail Date mendment/Comment tatement of Reasons for Al	
HOANG V. NGUYEN PRIMARY EXAMINER	ı		

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## Allowable Subject Matter

1. Claims 1-46 are allowed.

2. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, Luh et al (USP 5,790,077) discloses a method for designing a shaped-reflector antenna. Luh, however, fails to teach the specific steps of providing an initial configurations of reflectors shaped with an initial reflector shaping process and feeds for the multibeam antenna for required beam directions, the process being an iterative optimization process for increasing the focusing of optical rays incident on the multibeam antenna from each of the beam directions; optimizing radiation patterns of the feeds by iterative process for satisfying required upper and lower bounds for gain radiation patterns of beams of the multibeam antenna; optimizing surface shapes and sizes of the reflectors by an iterative process for satisfying the required upper and lower bounds for the gain radiation patterns of the beams of the multibeam antenna.

Claims 2-13 are allowed for depending on claim 1.

Regarding claim 14, Luh et al discloses an apparatus for designing a shaped-reflector antenna. Luh, however, fails to specifically disclose means for providing an initial configuration of reflectors shaped with an initial reflector shaping process and feeds for the multibeam antenna for required beam directions, the process being an iterative optimization process for increasing the focusing of optical rays incident on the multibeam antenna from each of the beam directions; means for optimizing the radiation patterns of the feeds by an iterative process for satisfying required upper and lower bounds for gain radiation patterns of beams of the multibeam antenna;

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and means for optimizing surface shapes and sizes of the reflectors by an iterative process for satisfying the required upper and lower bounds for the gain radiation patterns of the beams of the mulitbeam antenna.

Claims 15-26 are allowed for depending on claim 14.

Regarding claim 27, none of the prior art of record fairly teaches or suggests a computer program product comprising computer program code means for providing an initial configuration of reflectors shaped with an initial reflector shaping process and feeds for the multibeam antenna for required beam directions, the process being an iterative optimization process for increasing the focusing of optical rays incident on the multibeam antenna from each of the beam directions; computer program code means for optimizing the radiation patterns of the feeds by an iterative process for satisfying required upper and lower bounds for gain radiation patterns of beams of the multibeam antenna; and computer program code means for optimizing surface shapes and sizes of the reflectors by an iterative process for satisfying the required upper and lower bounds for the gain radiation patterns of the beams of the multibeam antenna.

Claims 28-39 are allowed for depending on claim 27.

Regarding claim 40, none of the prior art of record fairly teaches or suggests an apparatus for electromagnetically designing a shaped-reflector multibeam antenna comprising a storage unit for storing data and computer program code to be carried out by a processing unit; a processing unit coupled to the storage unit; the processing unit being programmed with the computer program code to provide an initial configurations of reflectors shaped with an initial reflector shaping process and feeds for the multibeam antenna for required beam directions, the

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process being an iterative optimization process for increasing the focusing of optical rays incident on the multibeam antenna from each of the beam directions; optimize the radiation patterns of the feeds by iterative process for satisfying required upper and lower bounds for gain radiation patterns of beams of the multibeam antenna; and optimize surface shapes and sizes of the reflectors by an iterative process for satisfying the required upper and lower bounds for the gain radiation patterns of the beams of the multibeam antenna.

Claims 41-46 are allowed for depending on claim 40.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

## Conclusion

- 4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:
  - Patent 5,160,937 discloses a method of producing a dual reflector antenna system.
  - Patent 4,757,325 discloses a method for designing sector beam antennas.
  - Patent 4,755,826 discloses a method for designing a dual reflector antenna system.
- 5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang V Nguyen whose telephone number is (571) 272-1825. The examiner can normally be reached on Mondays-Fridays from 9:00 a.m. to 5:00 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoang Nguyen can be reached on (571) 272-1825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hvn 11/19/04

> HOANG V. NGUYEN PRIMARY EXAMINER